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Contextual Risk and the Association Between Sensitive Parenting and Social Competence
During Early Childhood

A Thesis

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Master of Science
in
Psychology

By
Moir Rose Riley
B.A., University of South Florida 2007

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Abstract

Both contextual risk and sensitive parenting have been associated with children's social skills in early childhood (Brody, Stoneman, Smith & Gibson, 1999; Connell & Prinz, 2002; Oravecz, Koblinsky & Randolph, 2008, Trentacosta, 2008). However, it is not clear how sensitive parenting might impact children's social skill development in the context of accumulation of risk. The current study tests two possible models. The first model, based on Rutter's (1979) tests the theory that cumulative risk may moderate the relationship between sensitive parenting and social skills. The second model based on The Family Stress model (Conger, Conger, Elder, Lorenz, Simons & Whitbeck, 1992) tests the theory that sensitive parenting mediates the relationship between accumulation of risk and children's social skills. The results supported the first model indicating that cumulative risk moderated the relationship between sensitive parenting and children's social skills. When risk accumulated, there was a relationship between sensitive parenting and social skills where the highest level of sensitive parenting was associated with the highest level of social skills.

Early childhood, social skills, cumulative risk, parenting

Introduction

Early childhood is emerging as a critical period for the development of social competence. Acquiring social competence skills early in life may place children on a trajectory of increasing competence throughout the life span. That is, children who enter school more socially skilled have been found to make a more positive transition into kindergarten (Denham, 2006; Ladd, Herald, & Kochel, 2006; La Paro & Pianta, 2000), perform better academically during early childhood (Ladd, 1990; Ladd, Birch & Buhs, 1999, McClelland, Acock & Morrison, 2006), and have fewer internalizing and externalizing problems during elementary school (Lansford, Malone, Stevens, Dodge, Bates & Pettit, 2006). In contrast, children who lack basic social competence skills by the age of 6 are at increased risk for dropping out of school, criminal behavior and psychopathology during adulthood (Parker & Asher, 1987). Quite possibly, then, acquiring social competence skills during the early childhood period reduces children's risk for later psychopathology by placing children on a trajectory of increasing competence.

In the broadest sense, social competence includes behaviors that meet social goals (Rose-Krasnor, 1997). In early childhood, socially competent behaviors are organized around the goals of positive engagement and self-regulation during peer interactions (Denham et al., 2003). In other words, during early childhood, socially competent children are able to initiate positive play interactions and maintain social interactions through self-regulation. Social competence is most often measured by assessing children's social skills, their overall level of popularity using sociometric status ratings, through the quality of children's peer relationships and functional status (Rose-Krasnor, 1997). Of these four ways of measuring social competence, only social skills seem to measure skills necessary to develop and maintain social relationships. That is, sociometric ratings and quality of peer relationships provide useful information in understanding

whether children are liked or have friends; neither provides information as to *why* these children are liked by other children. Functional status is defined as information about what children do to achieve desired goals. However, as a measure of social competence, accurately evaluating “desired goals” is difficult. In contrast, social skills describe children’s ability to initiate and maintain play interactions with peers (Guralnick, 1993). Although having social skills does not guarantee social success, children with more sophisticated social skills tend to be better liked by their peers (Ladd, 1990). The social skills that are essential for social competence are typically defined as cooperation (e.g., puts away toys, helps with tasks), self-assertion (e.g., self-confident, introduces self), responsibility (e.g., questions unfair rules, asks to use others' property without using aggression), and self-control (e.g., controls temper, attends to instructions; Gresham & Elliot, 1990). The current study focuses on the social skill dimension of social competence.

Initially, children seem to develop social skills within the context of the home environment and through interactions with parents. Since children spend most of their time at home with their parents, interactions inside the home play a large role in the shaping of their social skills. Parenting that is characterized as high in warmth and support has been associated with increased social skills during preschool and middle childhood (Connell & Prinz, 2002; Oravec, Koblinsky & Randolph, 2008). In contrast, parenting behavior that is characteristically low in warmth and cognitive stimulation but high in harsh behaviors has been linked to lower levels of social skills during early childhood (Anthony, Anthony, Glanville, Naiman, Waanders & Shaffer, 2005; Brotman, Gouley, Neal & Klein, 2004).

While warm/supportive parenting has been directly linked to children’s social skills, an accumulation of environmental stressors may interfere with parents’ abilities to use warm/supportive behaviors during interactions with their children. That is, parents who must

cope with a variety of environmental stressors, such as low income, high levels of neighborhood danger, and residential over-crowding, may have less energy to devote to carefully and deliberately parenting and responding to their children. Little is known regarding the process by which an accumulation of environmental risks disrupts the impact of sensitive parenting on children's social skills. One approach is to consider an accumulation of exposure to environmental risks as a moderator of child adjustment (e.g., Rutter, 1979; see Figure 1, panel A). Under the cumulative risk approach, environmental stressors are first identified, a threshold of risk for each factor is defined (e.g., 1 standard deviation above the sample mean), and the number of factors which exceed the threshold are tallied. Given equal variability in sensitive parenting and social skills, the presence of two or more environmental risks should result in statistically significant differences in the magnitude of the association between sensitive parenting and children's social skills than at less than 2 environmental risks. In other words, if the statistical association between warm parenting and social skills becomes non-significant at elevated levels of environmental risk, then increases in the number of environmental risks may diminish the positive effects of sensitive parenting on children's adjustment.

In contrast to the moderational approach, the Family Stress Model proposes that environmental risk factors may impede parents' ability to use positive parenting (Conger, Conger, Elder, Lorenz, Simons & Whitbeck, 1992). That is, an accumulation of environmental stressors, such as single parenthood, overcrowding in the home, violence experienced by family members and neighborhood violence has been found to be associated with lower levels of warm parenting, parenting which in turn was associated with more internalizing and externalizing problems during early childhood problems (Scaramella, Sohr-Preston, Callahan & Mirabile, 2008). This approach assumes that risk indirectly influences children's adjustment by disrupting

the quality of parenting (see Figure 1, panel B). That is, while a moderational approach indicates that sensitive parenting is less effective under conditions of high risk, a mediational approach suggests that more risk is associated with less positive parenting. In other words, the two approaches consider whether the benefits of positive parenting diminishes as the number of stressors increases or whether more environmental stressors are associated with less positive parents.

Both the moderational and mediational approaches on children's development of social skills during early childhood, or from child age 2 to 4 will be evaluated within the present investigation. Consistent with Figure 1, panel A, cumulative risk may moderate the association between supportive parenting and social skills such that only after risk reaches a specific threshold does supportive parenting no longer predict social skills. Alternatively, as depicted in Figure 1, panel B, cumulative risk may indirectly influence children's social skills by negatively impacting mothers' capacity for sensitive parenting. The following sections first describe the social context in which social skills likely develop during early childhood, followed by a discussion of the construct of cumulative risk and the theoretical significance of an accumulation of risk on social interactional processes, and concluding with a summary of the impact of parenting on children's development of social skills.

Early childhood social contexts and social skill development: Sibling vs. peer relationships

Although social skills are typically evaluated within the context of peer interactions, in all likelihood social skills are first acquired, practiced, and refined within the family context, particularly during interactions with siblings. As compared to interactions with parents, exchanges with siblings are more balanced in terms of power. Given the highly conflictual nature

of sibling exchanges during early childhood, children have a number of opportunities to practice cooperation, self-assertion, responsibility and self-control (Stormshak & Bellanti, 1996).

Although sibling exchanges may provide a context in which children learn social skills, in all likelihood the convergence between social skills demonstrated during sibling and peer exchanges are modest at best. Indeed empirical evidence demonstrates low levels of correspondence between sibling and peer relationship quality (Abramovitch, Corter, Pepler & Stanhope, 1986; Mendelson, Aboud & Lanthier, 1994; Cutting & Dunn, 2006). Importantly, peer relationships characterized by elevated levels of conflict are not likely to be maintained over time (Laursen, Pursell, Rubin, Booth-LaForce & Rose-Krasnor, 2009), while even the most contentious sibling relationships are.

While the sibling context may provide more opportunities to observe children's social skills in practice than peer exchanges, the generalizability of children's social skill behaviors observed during sibling exchanges to peer interactions has been questioned. Importantly, a number of investigations have found that social skills displayed during sibling interactions are associated with teacher reported social interactions in the classroom (Sawyer, Denham, DeMulder, Blair, Auerbach-Major & Levitas, 2002). In addition, when sibling conflict occurred within the context of a warm sibling relationship, sibling conflict predicted teacher-rated social competence with peers in the classroom (Stormshak, Bellanti & Bierman, 1996). Importantly, comparatively less empirical attention has focused on understanding the emergence of social skills within sibling contexts as compared to peer relationships.

The current study addresses this gap by evaluating the extent to which children evidenced socially skillful behaviors during interactions with their older siblings. By utilizing sibling interactions, this study uniquely captures the impact of how their shared environment and

parenting may impact their social skills development. Although possible, it is unlikely that peers would experience environmental stressors and similar parenting. When siblings share the same environmental stressors and similar parenting, the collective effects on children's development may be greater because the siblings' behaviors may intensify one another. The unique impact siblings have on one another make sibling interactions an opportunity to better understand how children's environment influences their social development.

The impact of an accumulation of risk on children's social adjustment

The use of the cumulative risk index began with Rutter's Isle of Wright study (1979). Rutter (1979) developed an index to measure exposure to an accumulation of risks using six indicators: marital discord, low socioeconomic standing, household overcrowding, paternal criminality, maternal psychiatric disorder, and child involvement with foster care among 3,500 children. The Isle of Wright study is an epidemiological study, so the sample was not chosen for any risk characteristics. Not surprisingly, risk had a negligible effect on children's adjustment when families had risk scores of 0 or 1. However, as the number of risks accumulated, the negative impact of risk on children's adjustment increased exponentially. That is, with 2 risk factors present, a fourfold increase in the incidence of psychiatric disorder emerged. With 4 or more risk factors present, incidence of psychiatric disorder increased 10-fold. Rutter (1979) concluded that families may be able to tolerate low levels of risk, but as risks accumulate families' ability to protect children from the negative effects of those risks decreases rapidly. Importantly, a cumulative risk index is based on the assumption that the accumulation of risk factors, rather than any single risk or any combination of specific risks, detrimentally impacts children, a finding that has been since replicated (e.g., Seifer, Sameroff, Dickstein, Keitner, Miller, Rasmussen & Hayden, 1996; Trentacosta, 2008).

In a recent replication of Rutter's (1979) study, Trentacosta and colleagues (2008) developed a cumulative risk index using 7 indicators: teen parenthood, low educational attainment, single parenthood, residential overcrowding, criminal conviction, drug/alcohol problems and neighborhood dangerousness. Risk was tallied by summing the number of indicators with values falling within the at risk range. At risk status was determined by identifying a cut point for the sample that would include 25% of the sample within 3% points. Unique to the Trentacosta study, a large portion of the of participating families (75%) had incomes at or below poverty (Trentacosta et. al., 2008). Despite high levels of poverty, increases in the number of risk indicators were positively associated with higher levels of externalizing behavior problems during early childhood (Trentacosta et. al., 2008). Specifically, families with a greater accumulation of risks when children were 2 years of age also had children with higher externalizing behavior problems scores at age 2. Furthermore, level of cumulative risk at age 2 predicted increases in externalizing behavior problems from age 2 to 4, an effect that was mediated by sensitive parenting measured at child age 3.

While the Trentacosta and colleagues (2008) study focused on the effects of cumulative risks on children's development of externalizing problems, an accumulation of risk also has been found to be interfere with children's acquisition of social skills during early childhood (e.g., Brotman, Gouley, O'Neal & Klein, 2004). In a sample of preschool siblings of adjudicated adolescents, the impact of risk on children's social skills, after controlling for children's levels of conduct problems were examined. Two risk indicators were created, one measuring the total risk (i.e., cumulative risk index) and the other measuring parenting risk. The total risk index included: poverty, large family size, single parent household, child placement outside the home, low parental educational attainment, parental stressful experiences, parental psychopathology, and

parental antisocial disorder. Parenting risk included a measure of risky parenting behaviors, like harsh discipline, low levels of warmth and affection, and low levels of cognitive stimulation. Both total risk and parenting risk were directly associated with lower levels of social skills, but an interaction between parenting and total risk was not examined or reported.

Although Brotman and colleagues (2004) reported only significant main effects of parenting and total risk on children's social skills, two alternative hypotheses exist. First, sensitive parenting may have less of an impact on the acquisition of social skills when cumulative risk exceeds a certain threshold (i.e., moderational effect). Alternatively, consistent with Trentacosta and colleagues (2008), cumulative risk may indirectly influence children's social skills by disrupting mothers' abilities to respond sensitively to their children. Both of these hypotheses assume, though, that sensitive parenting is positively associated with social skills and the basis for this assumption will be discussed next.

Supportive, child-centered parenting and the development of social skills during early childhood

During early childhood, children primarily learn social skills from their parents and other caregivers (Belsky & Mackinnon, 1994; Pianta, 1997). Supportive parenting, or parenting that is defined as parents' ability to respond to children's needs and interests rather than parents' own goals (Kochanska, 1997), has been associated with more sophisticated levels of child social skills during early childhood (Burchinal, Roberts, Zeisel, Hennon & Hooper, 2006). Children who received more sensitive parenting prior to school entry were rated by teachers as being more socially skilled during kindergarten (Connell & Prinz, 2002). In a study of low income, rural, African American children, more competence-promoting parenting practices, consistent with sensitive parenting, was positively correlated with more psychosocial competence, including

increased self-control and cooperation, during the preschool period (Oravec, Koblinsky & Randolph, 2008). Each of these studies is limited in that any association between parenting and social skills was examined at the same point in time; studies examining the impact of parenting on predicting change in social skills during early childhood are rare.

One exception is the work of Tong and colleagues (2009) who found that parents who frequently and consistently play with their children had more socially competent children. In addition, positive care that occurs daily, such as singing songs and reading books also increased children's social skills. In contrast, less positive parenting behavior was linked to less sophisticated social skills (Gershoff, et al., 2007)

Summary of study hypotheses

In the current study, two different models were tested to evaluate the process by which risk disrupts the impact of sensitive parenting children's acquisition of social skills. The first model suggests that environmental risk moderates the association between sensitive parenting and social skills such that as the number of risks accumulate, the association between sensitive parenting and social skills becomes non-significant (see Figure 1, panel A). In this scenario, levels of sensitive parenting should be positively associated with social skills when risk is low, but when cumulative risk is high, sensitive parenting and social skills are not significantly associated. The second model tests the assumption that an accumulation of risk indirectly affects children's social skills by undermining parenting (see Figure 1, panel B).

One challenge with computing risk indices is that the point at which a family is considered to be 'at risk' is dependent on the sample distribution of that risk factor. For instance, having 1 or 2 dangerous events occur within a neighborhood during the past year may be considered "at risk" for a rural sample, but not considered "at risk" for a low-income urban

sample. Rutter (1979) coded families as “at risk” if their scores on 7 different indicators of risk were 1 standard deviation above the mean (approximately 19% of the sample). Trentacosta and colleagues (2008) created risk scores that captured 25% of the participating families. Since the current study relies on an economically disadvantaged sample, similar to the Trentacosta and colleagues (2008) study, risk will be coded the top 25% of the distribution for each risk indicator, except for risk indices that are categorical (e.g., single parent status, high school graduation).

Understanding the process by which parenting is affected by cumulative risk has direct intervention implications. If sensitive parenting mediates the relationship between risk and social skills, then focusing on sensitive parenting would be the most important. However, if cumulative risk moderates the association between sensitive parenting and social skills, then interventions that include a target reducing risks may be most effective.

Methods

Participants

Mothers with children enrolled in Head Start and a younger child who would be 2 years of age during the course of the study were recruited to participate. A total of 168 families, which included mothers, preschool-aged children, and 2-year-old target children, participated. One family was excluded because the target child was severely developmentally disabled, leaving a total of 167 participants at wave 1. All participating families resided in the greater New Orleans area and participated 1 to 3 years after Hurricane Katrina struck the Gulf Coast. Participating mothers averaged 25.31 years of age ($SD = 3.57$ years), preschool children averaged 49 months ($SD = 7.63$) and target children averaged 24.16 months of age ($SD = 1.77$ months). Participants were African-American (90.2%), White (4.9%), or Middle Eastern (1.2%). Of the 2-year old children assessed, 57.5% were female. On average, mothers had 3.19 children ($SD = 1.46$) and

each household supported 4.35 people ($SD = 1.55$). Regarding mothers level of education, 52.7% of mothers graduated from high school and 33.9% of mothers were either married or living with a romantic partner at the time of the interview. Families were very poor, with an average income to needs ratio of 1.06 ($SD = .70$) and an average per capita income of \$2,801.

Procedures

Recruitment for the study took place at Head Start parent orientation meetings and when parents registered their children for Head Start. All interested mothers completed a brief recruitment screener in order to determine eligibility. Mothers with eligible children and who indicated their willingness to participate were contacted by project staff and the study was explained to them in greater detail. Interviews were scheduled for interested mothers. Interviews mainly took place in the families' homes, but a few were conducted in a lab setting or at Head Start centers at mother's requests. Interviews lasted approximately 2.5 hours. Interviews consisted of three parts: a videotaped structured interview, a questionnaire completed by mothers, and a language assessment of the preschool-aged child. Mothers received \$100 for participating and each child received a small toy worth about \$5. There were three waves of interviews, at target age 2, 3 and 4. Interviews occurred within 1 month of the target child's birthday. Only data from wave 2 and wave 3 will be used in the proposed study.

Informed consent occurred during the first interview. The interviewer read the consent form to the mother. The consent form was read slowly so that the interviewer could answer any questions as needed. The interview did not proceed until the informed consent had been signed and all questions had been answered. The mother was given a copy of the consent form and information on who she could call if she had any questions or concerns. At each consecutive wave the consent form was reviewed with the mother. After informed consent procedures, the

interviewer reviewed a list of activities that would happen during the interview. The mother was given a brief description of each activity and any questions or concerns were addressed. The mother was allowed to keep a copy of the task list so that she can keep track of tasks during the interview.

The structured interview included multiple observational tasks. The tasks relevant to this study are the matching task at wave 1 (age 2) and the remote control car task at wave 3 (age 4). During the matching task, the mother was instructed to teach the target child how to play the matching game. Then, the interviewer showed the mother how the game is played. For the game each person received a set of plastic cookies with shapes on them. A jar of cookies that contains the matches was placed between the mother and target child. One side of the match has a raised shape and the other has the shape carved out so that the two pieces fit together. The mother is instructed to reach into the jar without peeking. If the cookie matches one of the cookies the mom has, she keeps the match. If the cookie doesn't match, she puts it back into the jar. The mom was instructed to keep alternating turns until someone matches all of their cookies. The person that matches all of the cookies first is the winner. After three minutes the interviewer returns with the sibling and the target child and sibling play together. This task is designed to be difficult and puts a lot of demand on the mother. The task is difficult because the matching game is beyond the target child's developmental level. In addition, there are a lot of rules that must be followed to play the game which is also demanding on the mother.

Prior to the *remote control task*, siblings are taught how to operate a remote control car off camera. Once interviewers are confident that siblings can use the car, siblings carry the car and remote to the interview space with the interviewer. Thus, the task begins with siblings in possession of the remote control and the car. No other toys are available to play with at this time.

Mothers are given a questionnaire and are told to allow the children to play by themselves, but mothers also are told to provide any help necessary. Before leaving the room, interviewers instruct siblings to teach target children how to use the car. After five minutes, the interviewer returns. This task is designed to elicit prosocial and conflictual sibling behavior.

Two teams of trained undergraduate observational coders rated all interactions. One team of coded the parenting interactions while another team coded social interactions. Prior to coding, each social skills coder received a minimum of 20 hours of training and achieved an average inter-rater reliability estimate of .80 on training interactions. Twenty-five percent of all tasks were double coded to estimate inter-rater reliability. To monitor ongoing adherence to the coding procedures, coders attended weekly reliability meetings, and disagreements in coding were resolved. All coders were blind to the identity of families and to study hypotheses.

Measures

Cumulative risk. The cumulative risk index was created using data collected from the two questionnaires completed during the wave 1 assessment. Similar to Trentacosta and colleagues (2008), a cumulative risk index was created by summing 7 dichotomized risk variables: mother education, age at first birth, single parenthood, substance use, home overcrowding, violence experienced by family members, neighborhood violence. Each indicator was assigned (1) at risk, top 25% of the indicator distribution, or (0) no risk, bottom 75% of the indicator distribution. The recoded dichotomized variables were then combined to create the cumulative risk index. The means, standard deviations, and the minimum score for the top quartile for each continuous indicator are summarized in Table 1.

Table 1.

Summary of the Means, Standard Deviations and Minimum Cutoff Scores for Continuous Risk Indicators

	Mean	SD	Minimum Score In Top Quartile
Substance Use	1.25	0.36	1.4
Home Overcrowding	1.99	0.65	2.5
Violence Experienced By Family & Friends	2.88	0.71	3
Neighborhood Violence	1.63	0.54	5

Mother education was coded as 1 if she did not graduate high school or if she obtained a GED, graduating high school is non-risk. For this sample, 51(30.5%) participants did not graduate high school. *Mother's age at first birth* was coded as risk if she was a teenager at the birth of her first child, not necessarily the target child in the study. For this sample, 39(23.4%) participants were teenagers at the birth of their first child. Single parent status at wave 1 was coded as risk and only married status was coded as non-risk. For this sample, 93(55.7%) were single parents. *Home overcrowding* was coded as risk if the ratio of bathrooms to bedrooms were in the top quartile of the distribution.

In addition to these descriptive indicators, and similar to the approach used by Trentacosta and colleagues (2008), mothers' reported substance use, violence to family members and level of neighborhood danger was included in the risk index. Mothers completed 10 items regarding their frequency of using a variety of substances including tobacco, prescription drugs for recreational purposes, and illegal drugs. Items were rated on a 4-point Likert scale, ranging

from 0 to 3 with high scores indicating more frequent use. In general, mothers reported very low levels of substance use (mean = 1.25; $SD = 3.6$). Mothers were coded as risk if their self-reported substance use score was in the top quartile of the distribution.

Mothers' reports on the Me & My Neighborhood Questionnaire (Pittsburgh Youth Study, 1991) were used to create the neighborhood danger measure and violence experienced by family and friends measure. Mothers rated 20 items regarding the frequency with which events occurred during the past year on a 4 point Likert scale (0=never, 1=once, 2= a few times, and 3=a lot). Because less severe events (e.g., "Neighbors arguing loudly.") may occur more frequently than more severe events (e.g., "A family member was stabbed or shot."), all items were recoded as 0 (never occurred) or 1 (occurred at least once) during the past year.

Based on these items, two indices of danger were created, one measuring *neighborhood dangerousness* and the other measuring *violence towards family and friends*. *Neighborhood dangerousness* consisted of 9 items which described events that were neighborhood-specific (i.e., "You hear neighbors complaining about crime in your neighborhood," "You carry a gun or knife for safety," "You see or hear about a shooting near your home," "You see strangers drunk or high near your home," "A gang fight occurs near your home," "People in your neighborhood complain about being harassed by the police," "You see cars speeding or driving dangerously on your street," "You see people dealing drugs near your homes," "You hear adults arguing loudly on your street."). On average mothers reported 3.56 events ($SD = 2.78$) occurring in their neighborhood during the past year. The risk score was created by recoding the score as 1 for the participants in the top quartile of the distribution.

The *violence experienced by family and friends* consisted of 11 items that measured mothers' awareness of dangerous and risky events that may have happened to people close to

them, but that may not have occurred in the neighborhood (e.g., “A friend carries a gun or knife for safety,” “Someone you know got arrested or sent to jail.”). On average mothers reported 2.88 dangerous events towards family or friends ($SD = .71$) occurring in their neighborhood during the past year. The risk score was created by recoding the score as 1 for the participants in the top quartile of the distribution.

Positive Parenting. Positive parenting was measured using observational ratings of mothers’ parenting behavior during the 5- minute matching task. Like the NICHD Early Childcare Study (e.g., Adi-Japha,& Klein, 2009), positive parenting scores were computed by averaging coder ratings across three scales: sensitivity/supportive presence, positive regard, and stimulation of cognitive development. The *sensitivity/supportive presence* code measures mothers’ behaviors that are child-centered rather than mother-centered. The code includes evidence of mothers’ awareness of their children's needs, moods, interests, and capabilities as well as mothers’ contingent responses to children’s distress and non-distress. The *positive regard* code measures mothers’ expression of positive feelings towards their children, including affection, liking, appreciation, care, praise, concern, or support. The *stimulation of cognitive development* coded measures the degree to which mothers fosters children’s cognitive and language development. Behavioral indicators of stimulation of cognitive development include: labeling, encourage children to speak, explanations, imaginary play, asking children questions, and responding to children’s vocalizations. Each of the scales was rated on a 7 point Likert scale ranging from 1 (not at all characteristic) to 7 (very highly characteristic). Interrater reliability for each code was excellent with inter-class correlation coefficients of .91 for sensitivity/supportive presence, .86 for positive regard, and .86 for stimulation of cognitive development, and .89 for dyadic relationship quality. A positive parenting score was created by averaging across the three

indicators ($\alpha = .84$). On average, mothers demonstrated somewhat low to moderate levels of positive parenting ($M = 3.05$; $SD = 1.02$).

Social Skills. Social skills were measured using observational ratings of the target child's behavior during the remote control task. The social skills codes were based on the peer dyadic observations conducted at 36 months for the NICHD Early Childcare Study (NICHD, 2001). The NICHD measure was used achieving an inter-rater reliability of .94-.97 for individual codes. The adapted measure (Appendix A) is comprised of 3 codes: involvement in positive social interaction, sharing turn taking and cooperation, and self-assertion. *Involvement in positive social interaction* measures the level of overall involvement in positive social interaction during the play session. A high score on this code would indicate a child who positively interacted with their sibling, whether or not they had control of the car or not. *Sharing, turn-taking and cooperation* measures the amount to which the child shares materials or attempts to include the sibling in the play episode. A high score on this code would indicate a child that both shares materials readily while also including the sibling in cooperative play. *Self-assertion* measures the extent to which the target child exerts control over the play activities, directs activities, or asserts self during the interaction. A high score would indicate a child that is very assertive though out the interaction and is successful in actively directing play activities. Interrater reliability for each code was excellent with inter-class correlation coefficients of .89 for positive involvement, .94 for sharing, turn taking and cooperation, and .90 for self-assertion. A social skills composite score was created by averaging across the three indicators. On average, children demonstrated somewhat low to moderate levels of social skills ($M = 2.5$; $SD = .72$).

Results

Data Analytic Plan

Prior to testing any hypotheses, the distributions of all study constructs were examined to see if they meet normality assumptions, and correlations were computed to ensure that study constructs were related in expected ways. Next, study hypotheses were evaluated. Since children's age and gender were not expected to affect any of the hypothesized predictions, children's age and gender were statistically controlled in all analyses. The first set of analyses evaluated the mediational hypothesis using path analysis with AMOS 17.0 (see Figure 1, panel B). This model tested the expectation that the effect of risk on children's social competence was indirect via sensitive parenting. The second set of analyses evaluated the moderational hypothesis using hierarchical multiple regression. In the regression analyses, all independent variables were centered and an interaction variable was created by multiplying the centered sensitive parenting and cumulative risk constructs. A regression equation was computed by entering children's age and gender in the first step, the centered sensitive parenting and cumulative risk scores in the second step, and the interaction term in the final step. One final model was estimated which evaluated both hypotheses simultaneously using path analysis. In this final path analysis, the model depicted in Figure 1, panel B was re-estimated this time including the interaction term of sensitive parenting and cumulative risk. This final analysis evaluates the extent to which both mediation and moderation may explain children's social competence.

Correlation analyses

Before testing the hypotheses with linear regression and structural equation modeling, bivariate correlations were computed among study constructs to evaluate the pattern of

associations (see Table 2). Cumulative risk and positive parenting were statistically significantly and negatively correlated ($r = -.16$; $p < .05$) indicating that higher levels of positive parenting were associated with lower levels of risk. In contrast, cumulative risk and positive parenting were not statistically and significantly correlated with children's social skills. Given the lack of a statistical relationship between cumulative risk and children's social skills, little empirical support for the mediational hypothesis exists. That is, without a statistically significant bivariate relationship between cumulative risk and social skills, there is nothing for positive parenting to explain. Similarly, the likelihood that cumulative risk will be indirectly related to social skills through positive parenting also is unlikely since positive parenting was not significantly correlated with social skills. Although the correlational results provide little empirical support for the mediational hypothesis, this hypothesis was still evaluated. Moreover, non-significant correlations between social skills and both cumulative risk and positive parenting does not rule out moderation.

Table 2
Descriptive Statistics and Correlations among Cumulative Risk Index, Positive Parenting and Social Skills Composite Scores

	1	2	3	<i>M</i>	<i>SD</i>
1. Cumulative risk Index				2.25	1.31
2. Positive parenting	-.16*			3.03	1.01
3. Social skills composite	-.01	.11		2.50	.72

Note: + $p < .10$; * $p < .05$; ** $p < .01$.

Hypothesis testing: Positive parenting mediates the link between cumulative risk and social skills

Given the pattern of statistically significant bivariate correlations, little empirical evidence existed to support either a mediational or indirect effect of cumulative risk on social skills. Nonetheless, structural equation modeling was used to test the hypothesis that positive parenting would mediate the relationship between cumulative risk and social skills (see Figure 2). After controlling for children's age and sex, a path analysis was computed and fit indices were examined to evaluate model fit. As recommended by Kline (2011), three fit indices were examined. In the present analyses, the fit indices indicated that the model did not fit the data well. First, the chi-square was statistically significant ($\chi^2(6) = 11.35; p > .05$) and both the CFI (.01) and RMSEA (.07) indicated a poor fit for the model. After controlling for age and gender, none of the path coefficients were statistically significant.

Hypothesis testing: Cumulative risk moderates the effect of positive parenting on social skills

A hierarchical multiple regression equation was computed to test the hypothesis that cumulative risk would moderate the relationship between positive parenting and social skills (see Table 3). After statistically controlling for children's age and gender, no direct effects of cumulative risk ($\beta = -.02; p > .05$) and positive parenting ($\beta = .14; p > .05$) on social skills emerged. Consistent with expectations, a statistically significant interaction term emerged (see Table 3). The interaction term was decomposed by calculating the simple slopes of the association between social skills and positive parenting at 1 standard deviation above and below the mean of cumulative risk (Cohen, Cohen, Aiken, & West, 2003). Contrary to expectations, the association between positive parenting and children's social skills was statistically significant

only at highest levels of cumulative risk (see Figure 3). That is, at 1 standard deviation above the mean on cumulative risk, the association between positive parenting and social skills was statistically significant ($t = 3.12$; $p < .01$), indicating that increases in positive parenting was associated with similar increases in children's social skills. At mean levels and at 1 standard deviation below the mean of cumulative risk, the slopes for the association between positive parenting and children's social skills were not significantly (mean levels of cumulative risk: $t = 1.38$; $p > .05$; 1 SD below the mean on cumulative risk: $t = -1.10$; $p > .05$; 1).

Table 3

Results of the Regression Analysis Estimating Direct and Interactive Effects of Cumulative Risk and Positive Parenting on Social Skills

	<i>Social Skills</i>		
	ΔR^2	F_{ch}	b
Step 1:	.03	.89	
Target Child Sex			-.02
Target Child Age			.05
Sibling Sex			.09
Sibling Age			.11
Step 2	.02	1.45	
Cumulative Risk Index (CRI)			-.02
Positive Parenting			.14
Step 3	.06	8.52**	
CRI x Positive Parenting			.24**
Total R^2 : .10			

Note: + $p < .10$; * $p < .05$; ** $p < .01$.

Since the 1 standard deviation above or below the mean are arbitrary cut points to evaluate the magnitude of the slope between positive parenting and children's social skills, one additional analysis was computed to evaluate the point at which a statistical association between positive parenting and social skills emerge. That is, Rutter's (1979) study indicated a threshold effect for children experiencing 2 or more stressors; only when the level of stress accumulated above this threshold were children negatively affected by the accumulation of environmental

stress. In the present study, bivariate correlations were computed between positive parenting and children's social skills at 1 or more risks, 2 or more risks, 3 or more risks, and 4 or more risks. Since the correlation between positive parenting and children's social skills was not statistically significant at the bivariate level (see Table 3), but was at 1 standard deviation above the mean, this analysis pinpoints the point at which risk amplifies the effects of positive parenting on social skills.

Mediation vs. moderation: Pitting both hypotheses against one another

The final model simultaneously evaluated the mediational and moderational hypotheses using structural equations modeling. In this analysis, the model depicted in Figure 2 was re-estimated adding an additional construct, the interaction term between positive parenting and cumulative risk, and estimating the direct effect on social skills. Consistent with the moderational results, only the interaction term was statistically significant ($b = .24; p < .05$).

Discussion

Despite the evidence indicating that acquiring social skills prior to school entry seems to protect children from experiencing behavioral and academic problems (Ladd, 1990; Ladd, Birch & Buhs, 1999, Lansford, Malone, Stevens, Dodge, Bates & Pettit, 2006; McClelland, Acock & Morrison, 2006), little is known regarding how characteristics of children's early environment affects their social development. While environmental risks and stressors, such as neighborhood disadvantage and financial hardship, has been found to negatively impact positive parenting practices (e.g. Scaramella, Sohr-Preston, Callahan & Mirabile, 2008), mechanisms by which environmental risks and stressors affect children's adjustment is less well understood. The current study considered how exposure to an accumulation of environmental risks, such as indicators of socioeconomic and neighborhood disadvantage, affects children's social skills

acquisition during early childhood. Two mechanisms were evaluated. First, positive parenting measured at age 2 was expected to mediate any direct link between cumulative risk experienced at age 2 and children's social skills observed at age 4; no support for this hypothesis emerged. Second, cumulative risk was expected to interact with positive parenting, such that as levels of risk increased, the benefits of positive parenting on children's level of social skills diminished. No support for this expectation emerged, although cumulative risk and positive parenting did significant interact to affect children's social skills. Instead, at elevated levels of cumulative risk, specifically experiencing 4 or more risks, positive parenting was positively associated with children's social skills. In other words, positive parenting measured at age 2 predicted levels of social skills observed during interactions with siblings at age 4, but only for those children whose mothers' reported 4 or more environmental risks when children were 2 years of age.

Relationship between parenting and cumulative risk on children's social skill acquisition

Theoretically, two mechanisms may account for the expected associations between cumulative risk, positive parenting, and children's acquisition of social skills. First, consistent with the Family Stress Model (FSM; Conger, Conger, Elder, Lorenz, Simons & Whitbeck, 1992), an accumulation of stressors undermines parents' abilities to provide positive parenting by decreasing their overall mental health. Parents who are mentally exhausted from coping with a large number of environmental stressors may not have the emotional capacity to provide positive parenting. Importantly, low levels of positive parenting are expected to be associated with more maladaptive outcomes in children (e.g., Conger, et al., 1992). Thus, parenting explains or mediates any direct effect of environmental risk on children's adjustment. The FSM outlines a process by which one specific stressor, namely economic hardship, negatively impacts children's adjustment by negatively impacting parents' mental health, the quality of their romantic

relationships, and their parenting. Using a subsample of participants from the current study, a statistically significant indirect effect of economic hardship, but not neighborhood violence, on mothers' parenting efficacy through depression was found (e.g., Scaramella et al., 2008).

The current study attempted to extend the FSM by using a broader measure of environmental risk. The cumulative risk approach summarizes tallies the number of different domains of risk and provides a score which reflects the total number of areas in which a specific family exceeds a distributionally established threshold (e.g., 1 standard deviation above or below the sample mean). Thus, the cumulative risk approach considers more than simply economic hardship and contains theoretically relevant contextual risks that may disrupt social processes. Findings from the present study do replicate Trentacosta and colleagues (2008) work in that an accumulation of risks was negatively associated with positive parenting. However, cumulative risk and positive parenting were unrelated to children's observed social competence and no evidence for mediation emerged. The measure of cumulative risk used in the current investigation included risks that were proximal to the child (i.e., home overcrowding, mothers' substance use), risks representing the neighborhood context (e.g., violence experienced by family members, neighborhood violence), and sociodemographic risks (i.e., mother education, age at first birth, single parenthood). Quite possibly indirect effects occur with risks most proximal (i.e., maternal substance use) to the child rather than those that are more distal to the family.

In contrast to cumulative risk, the rationale as to why positive parenting was unrelated to social skills even at the bivariate level is quite perplexing. For instance, Oravecz and colleagues (2008) found a linear association between positive parenting and social skills among a sample of low income, urban, African American children. Two critical differences exist between the Oravecz study and the current study. First, the association between parenting and social skills

was contemporaneous not longitudinal. In the current investigation, positive parenting observed when children were 2 years of age was not significantly correlated with the quality of their social skills observed during interactions with their older sibling two years later. Second, Oravec and colleagues relied on parent report for all measures and they cannot rule out the possibility of shared method variance partially accounting for their reported statistical associations. In the current investigation, both positive parenting and children's social skills were based on independent teams of trained observers. Quite possibly, parenting observed during the toddler period differentially affects children's social interactions with their siblings, a point considered with the next tested mechanism.

The second mechanism to explain associations among cumulative risk, positive parenting and children's level of social skills considered cumulative risk as moderating or conditioning the association between positive parenting and social skills. Based on Rutter's (1979) findings, at elevated levels of risk, or when risks accumulate beyond a threshold, the benefits of positive parenting on social skill acquisition would be diminished because the accumulation of stress would overwhelm parents. While a statistically significant interaction between cumulative risk and positive parenting on social skills emerged, the results were contrary to expectations. Instead, under conditions of the highest risk, specifically 4 or more risk indicators, positive parenting was positively associated with social skills. In other words, when parents faced the greatest stressors, more positive parenting was associated with better social skills.

These results are perhaps most meaningful when placed within the context of the sample used in the study. The current study relied on a highly socially disadvantaged sample. Most participating families had income levels at or below the poverty line. Other studies examining the effects of cumulative risk on social adjustment typically relies on less impoverished samples

(e.g., see Trentacosta, et al. (2008) for a notable exception). With a less impoverished sample results may have been more consistent with expectations. However, when considering that the current sample may only represent an extreme end of the income distribution, or the upper end of most distributions, the non-significant positive parenting and children's social skills correlation is expected. What is surprising is that for the families experiencing the most risk, within an at risk sample, positive parenting was protective. That is, children who received positive parenting, despite of being exposed to the highest levels of risk, demonstrated the highest levels of social skills.

These results beg the question as to why positive parenting may be associated with enhanced social skills at the highest level of risk. Quite possibly, parents who experience more accumulated risk may have a stronger influence on their children's social development because there may be fewer adaptive experiences outside of the home. For example, children may not have positive interactions with other adults when stress is pervasive in their community. In fact, Bates and colleagues (2002) found that low-income children living in a neighborhood with lower poverty rates were more likely to be socially competent than children who lived in neighborhoods where poverty was prevalent. When other resources for adaptive interaction are not present, positive parenting may be one of the only opportunities for children to learn social skills. In addition, children who experience low to moderate levels of accumulated risk may be exposed to more varied social contexts and have more opportunities to learn social skills in other settings.

Two implications of these findings are apparent. First, parents' abilities to provide positive parenting seems to be especially critical in high risk environments. Second, community resources outside of the home may help to buffer children against a lack of positive parenting.

Additional research is clearly needed to understand how mothers are able to engage in positive parenting practices despite coping with an accumulation of environmental risks and stressors. Clarifying the complex interplay of accumulation of risk and parenting has important implications for future interventions aimed at promoting children's social competence.

Implications for Intervention

Although accumulated risk may negatively impact children's social development, these results suggest that positive parenting may buffer children against these risks. Given the limited financial resources devoted for intervention, identifying populations who will benefit most from intervention is crucial. In the current investigation, the actual composition of accumulated risk varied from family to family, indicating that an accumulation of risk is more important than the specific risks experienced. When identifying families in need of intervention, considering the spectrum of contextual risks should be considered. Simply identifying families based on the presence or absence of a single risk, such as single parenthood, may misclassify families in need of assistance.

Particularly exciting, these results suggest that the potentially negative impact of accumulated contextual risks on parenting and, indirectly, on children's social skill development can be buffered by teaching the parents positive parenting skills. In addition to teaching positive parenting skills, addressing the ways that multiple risks may undermine parenting also may be crucial. Importantly, prevention research indicates that promoting parenting skills is most effective when programs also target the unique domains of risk specific families' experience. This combination approach is supported by research by Shaw and colleagues (2009) using the Family Check-up, a brief parenting intervention intended to reduce early childhood problem behaviors. The families in the study were also considered at risk due to low income status. This

intervention trial included a component that had families identify barriers to parenting (e.g. childcare). As part of the intervention, two identified barriers to parenting were addressed. By reducing these stressors, the brief parenting intervention was found to be more effective. A reduction in maternal depression mediated the relationship between a brief parenting program and reduction in child behavior problem behaviors.

Strengths, Limitations and Future Directions

The present study strengthens existing research examining the impact of risk on parenting and children's social skill development in a number of ways. First, observational measures of both parenting and social skills were used, both of which were coded by independent teams of coders, overcoming concerns of shared method variance biasing the findings (e.g., Oravecz, et al., 2008). Second, using observational methods to measure social skills is especially unique since most studies have relied on questionnaire reports of social skills. In addition, this study used a large sample and longitudinal design. Finally, this project compares two competing models of how cumulative risk and parenting may interact to predict social skills.

Despite these strengths this study is not without limitations. First, although a strength in some respects, the reliance on an 'at-risk' sample also is a limitation of the work. The current sample may represent the tail of the risk distribution making the findings unlikely to generalize to samples in which risk is more normally distributed. Second, social skills were only measured during sibling interactions. Although theoretically social skills should carry over from one context, very few studies have considered social skills within the sibling domain and instead rely on social skills during peer interactions. Quite possibly, positive and negative social skills evidenced in one context may or may not generalize to others. That is, conflict may be more characteristic of sibling than peer exchanges and not generalize whereas positive sibling

interactions may. Future research is clearly needed to evaluate the extent to which social skills evidenced during sibling interactions predict social skills in peer interactions. Finally, only levels of positive parenting were considered in this study. Thus, the study is limited in that it cannot make conclusions about other parenting behaviors, such as harsh parenting behaviors.

Despite these limitations, these results have some important implications for future research. First, these findings indicate the importance of accumulated risk rather than specific risk, these findings should be replicated using a more normalized distribution in order to fully understand the relationship between risk and development in a more normally distributed population. Second, this study indicates that in some contexts positive parenting behaviors may buffer children against environmental stressors, a study controlling for early social skill level would allow for a more clear understanding how parenting may be related to a change in social skill development. In addition, more research is needed to understand how parents in a high risk environment still manage to provide positive parenting, this would allow for additional strategies that might help improve the effectiveness of targeted interventions. Finally, additional community resources that may also buffer children against environmental risk should be considered.

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Appendix A

1. Amount of involvement in positive social interaction

This dimension indexes the overall level of involvement of the target child in positive social interaction during the session. Positive social interaction involves a give and take of conversation, exchange of objects, or shared positive affect. Verbal interaction can be on any topic, and the children's play may be toy-related or not. Involvement is defined by attention to sibling's activity, enthusiasm of response to sibling, and initiation of interaction with sibling.

A low score indicates that the child appears withdrawn or pays little or no attention to the sibling or the target child behaves in a way that makes the interaction negative. A moderate score describes a child who shows awareness of the sibling, imitates or watches the sibling, and is involved in some interaction with the sibling. A high score indicates a child who is involved in positive social interaction almost all the time with the sibling.

Examples:

- Watching the sibling play (low level)
- Responding to sibling's requests (e.g. getting the toy when sibling asks)
- Talks to sibling (this excludes verbal attempts to get the car)
- Actively running around and playing even with the sibling even when the child does not have possession of the toy (high level)
- Attempts to organize play activity (e.g. "Hey, let's play a game.", "Chase me!")

1 - Child is negative/withdrawn throughout the interaction

2 - Occasionally interacts with other child and or watches while being positive

3 - Sometimes interacts with the other child and or regularly watches while being positive

4 - Is sometimes involved in cooperative play and positively watches when not involved

5 - Highly involved in positive cooperative play with sibling

2. Sharing, turn-taking, and cooperation

This dimension evaluates the extent to which the target child shares materials or attempts to include the sibling in the play episode, actively allows the sibling a turn at an activity, or is involved in cooperative play with the sibling. Child's sharing must be active or mutual, not simply in response to sibling's aggressive behavior. Cooperative play involves a shared goal. Scale includes both quantity and quality of this behavior.

A child receives a low score on this item if he or she does not actively share or offer a turn. A moderate score means that the child shares some materials but not others or occasionally offers the sibling a turn or an opportunity to use a material when directed by their parent. A high score indicates the target child plays cooperatively with joint use of materials or a shared goal and is able to negotiate turn taking without parental assistance.

*If child never gets the car then code as 9.

Examples

- How much time lapses after mother tells the child to give up the toy should be considered, immediately sharing a toy should receive a higher score than waiting
- To receive a 5 the child must be using sharing as a part of cooperative play with verbal negotiation (eg. "You can play with it now, I've had a turn." "I can have another turn later.")

- 1- Does not share**
- 2- Shares some of the time when told by parent**
- 3- Shares when told by parent**
- 4- Sometimes shares on their own**
- 5- Regularly shares on their own with cooperation**
- 9- Child never gains control of car**

3. Self-assertion and control

This rating is intended to provide an indication of the extent to which the target child exerts control over the play session, directs the pair's activities, or asserts self in interaction.

A child who scores low on this scale is passive or uninvolved or plays actively but separately from the sibling. A moderate child shows some assertiveness, introduces a play activity, or directs the sibling's activity at some time during the session. The child's assertiveness is mostly physical. To receive a high score, the child is very assertive and essentially controls the play session either in a positive or negative manner. A high score indicates a child who successfully controls the play activity during the interaction by using only verbal self-assertion. The child's rating and the sibling's ratings are independent of each other such that either child may be scored high or low. This scale is not used for resistance to sibling's toy grabbing.

Examples:

- Physical self-assertion includes things like taking the controller away or pushing the car around
- Verbal self-assertion includes polite requests for a turn and negotiating how a game is going to be played
- Consider whether the self-assertion is successful, a child that never gets control of the toy cannot score higher than a 3
- If only physical self-assertion is used the child does not score higher than a 3

1 - Child is passive or plays alone throughout

2 - Child is occasionally assertive and tries to initiate or directs activities using physical assertion

3 - Child is sometimes assertive and tries to initiate or directs activities using physical assertion

4 - Child is frequently assertive and somewhat successful in directing play activities with one indicator of verbal assertion

5 - Child is very assertive throughout the interaction and actively directs play activities by only using verbal assertion

4. Proactive aggression

This dimension includes verbal and physical attempts by the target child to gain access to toys. This may be done by physically getting control of a toy, pushing the sibling's hand(s) out of the way, interfering with sibling's use of toys, grabbing, struggling over a toy, etc. This does not include efforts to retain a toy that is being grabbed by the sibling. If the sibling takes a toy and the child is aggressive about getting it back, score proactive aggression. Both physical aggression and verbal aggression are scored as proactive aggression, although physical aggression is scored more highly than verbal.

A child that scores low on this scale shows very little aggressive behavior when attempting to gain control of the toy. A moderate score would indicate a child that sometimes uses verbal aggression to gain control of the toy. A high score would indicate a child that regularly uses physical aggression to obtain control of the toy; this child may or may not use verbal aggression.

Examples:

- Verbal ("It's my turn!", "Give it to me!", "I want it!")
- Physical (clearly pulling the remote out of the other child's hand, picking up the car and throwing it in anger)
- A child who uses any physical aggression receives a score no lower than 4.

1 - Does not use aggression to obtain control, only polite requests

2 - Occasionally uses verbal aggression to obtain control

3 - Sometimes/frequently uses verbal aggression to obtain control, but not physical

4 - Frequently uses verbal aggression with at least one physical attempt to gain control

5 - Regularly uses physical aggression to gain control, may or may not use verbal aggression

5. Reactive aggression

This dimension includes aggression that is in reaction by the other child to obtain use of the toy. This includes both physical and verbal aggression.

A low score would indicate a child that does not react negatively to the sibling's attempt to gain control of the toy. A moderate score would indicate a child that regularly reacts with verbal aggression only. A high score would indicate a child that regularly reacts with physical aggression and may or may not use verbal aggression.

*If child never gets the car then code as 9.

Examples:

- Verbal ("No!", "Mine!", "Stop it!")
- Physical (Forcefully pulling the remote away when sibling tries to take it, pushing the sibling away)
- A score of a 4 or 5 indicates a child that is physically aggressive.

1 - Does not react negatively to others attempts to gain control

2 - Occasionally reacts with verbal aggression to others attempts to obtain control

3 - Sometimes/frequently reacts with verbal aggression to others attempts obtain control, but not physically

4 - Frequently reacts with verbal aggression with at least one physical reaction

5 - Regularly reacts with both verbal and physical aggression to others attempts to gain control

9 - Child never gains control of car

6. Tattling

This dimension is intended to measure how often the target child appeals to the mother in order to get what they want. The verbalizations need to be directed to mom.

Examples:

- Mom, I want to play with it.
- Mom, she isn't sharing.

1 - Never appeals to adult

2 - Appeals to adult 1 or 2 times

3 - Appeals to adult 3 or 4 times

4 - Appeals to adult 5 or 6 times

5 - Appeals to adult 6 or more times

7. Overall conflict

This dimension is to measure the amount of conflict that occurs during the interaction. This should be scored using both the quantity and quality of the conflict. Conflict is defined as a negative exchange that happens between siblings. So, if one sibling does something aggressive and the other sibling responds with aggression that would be considered conflict. If one child does not respond to the aggression of the other child, do not code as conflict. Conflict can be initiated by either child.

A low score would indicate that there is no conflict that occurs during the interaction. A moderate score would indicate frequent low level conflict or a few instances of medium level conflict. A high score would indicate frequent conflict that includes at least one instance of intense conflict.

Examples:

- Low level conflict is verbal conflict (e.g. TC: I want the car, Sibling: No!)
- High level conflict is physical (e.g. both grabbing at the remote or pushing each other)
- To receive a score of 3 or higher there needs to be at least one indicator of physical conflict between siblings.
- A score of 4 or higher means that relationship quality cannot be scored higher than a 3.

1 - No conflict occurs

2 - Some low level conflict occurs

3 - Frequent low level conflict and/or no more than one instance of high level conflict

4 – Two instances of high level conflict

5 – Three or more instances of high level conflict

8. Relationship Quality

This scale is a dyadic, global scale focusing on the affective and reciprocal aspects of the sibling relationship. Mutual enjoyment of play activity is evidenced through positive contingent verbal exchanges and shared positive affect.

In situations of high relationship quality, each seems to adapt well to the other, and the pair seems harmonious or 'in tune' with one another. The siblings obviously enjoy each other because there are visible indicators of enjoyment (e.g. smiling, eye contact). Additionally, their interaction may be characterized by a sense of playfulness and fun. The pair seems relaxed and their interactions and smooth and well coordinated.

Examples:

- Shared positive affect (e.g. both smiling or laughing while playing together)
- Contingent verbal exchanges involve the sibling verbally responding to something the sibling says.
- To receive a score of a 4 or 5 the siblings must have both shared positive affect and contingent verbal exchanges
- Receiving a score of 4 or 5 means that conflict can be no higher than a 3.

1 - There is very little relatedness, no contingent verbal exchanges or shared affect

2 - There are some contingent verbal exchanges or shared positive affect, but not both. These instances are brief and infrequent and do not characterize the interaction.

3 - There are some verbal exchanges or shared positive affect, but not both for at least half of the interaction.

4 – The dyad engages in frequent verbal exchanges and shared positive affect. This interaction is of high quality and occurs for at least half of the interaction.

5 - There are frequent verbal exchanges and shared positive affect; positivity dominates the interaction and there are no instances of negativity between the siblings.

9. Mother Intrusive

This dimension measures the extent to which mom directs the siblings play activity. Mothers can direct the play activity by placing boundaries on their play activities or directing sharing and turn taking. Mothers' use of intrusive control may be verbal or physical.

A low score indicates mothers that do not intrude on the interaction. A moderate score reflects mothers who sometimes directs the interaction; such control is low level and involves moderating the cooperation (e.g., telling one child to let the other have a turn with the toy). A high score indicates mothers that intrude both verbally and physically in the interaction and dominate the interaction such that the children have few, if any, opportunities to control the interaction.

Examples:

- Turn-taking (e.g., "Let your sister have a turn.", "Give your brother the remote." Low level)
- Controlling their physical location (e.g., "Get on the mat.", "You can only play over here.")
- Physical intrusion: any physical touching of the child that is not affectionate and is designed to direct the play. (e.g., Picking up a child that has left the room and returning the child to the room. Grabbing the toy from the child and giving it to the sibling)

1 - Does not intrude on interaction

2 – Has 1 - 2 instance of verbally directing play between the children. This verbal control is low level and only involves controlling access to the toy (e.g., turn-taking)

3 –Verbally directs play between the children 3 or more times, but this control only involves controlling access to the toy (e.g., turn-taking)

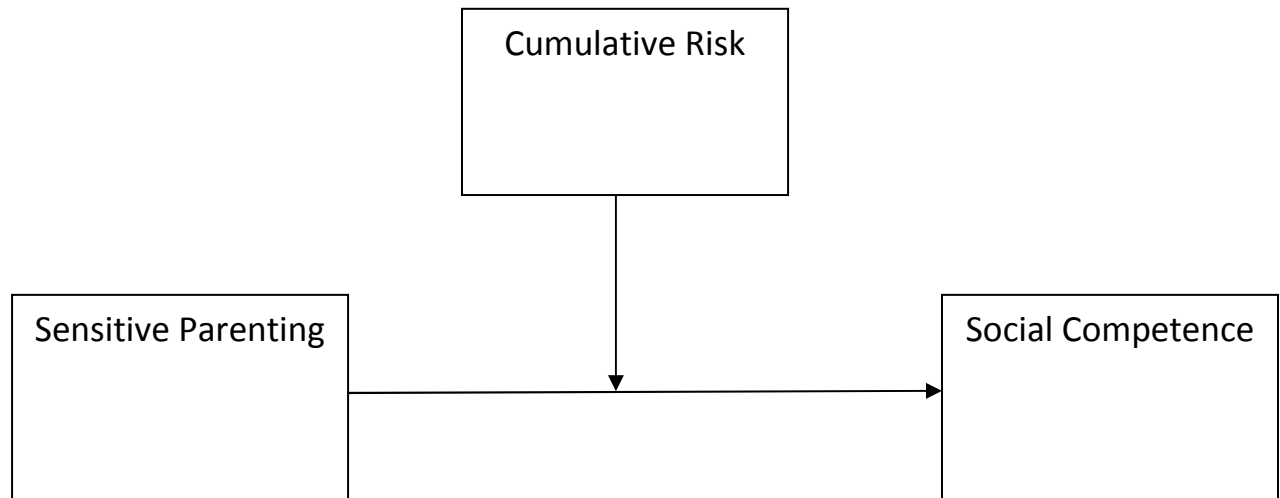
4 - Frequently verbally directs play between children and other aspect of play (e.g., Where they can play)

5 - Frequently verbally directs play and has at least one instance of physical intrusion

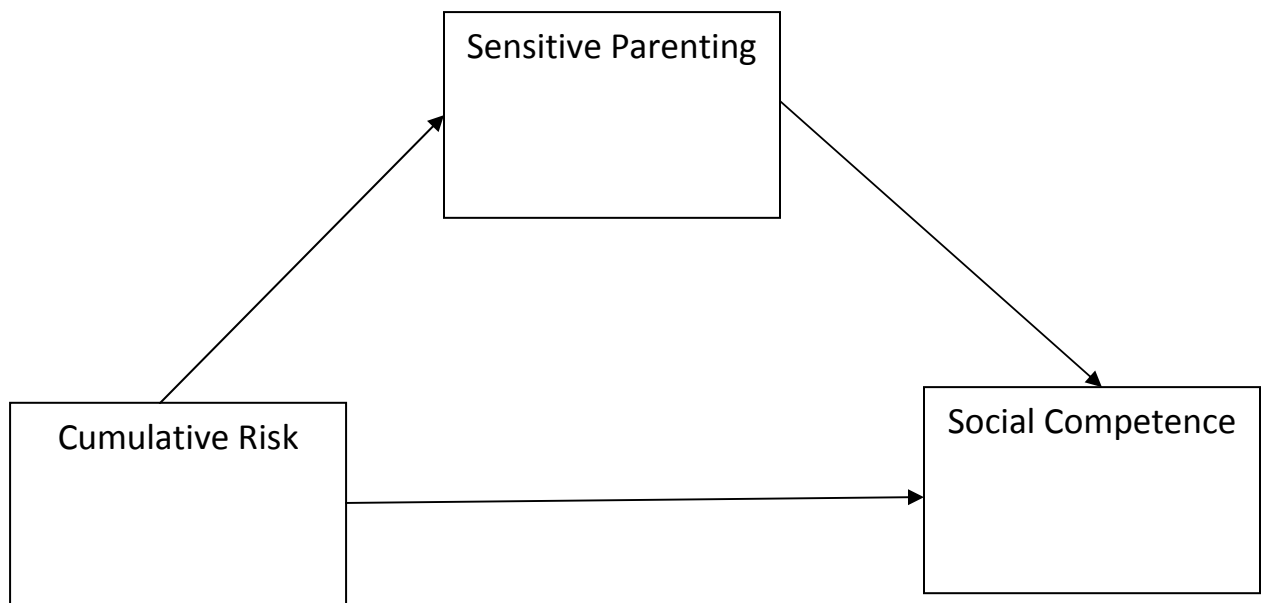
Appendix B

Figure 1. *Schematic depiction of the theoretical models to be evaluated.*

Panel A

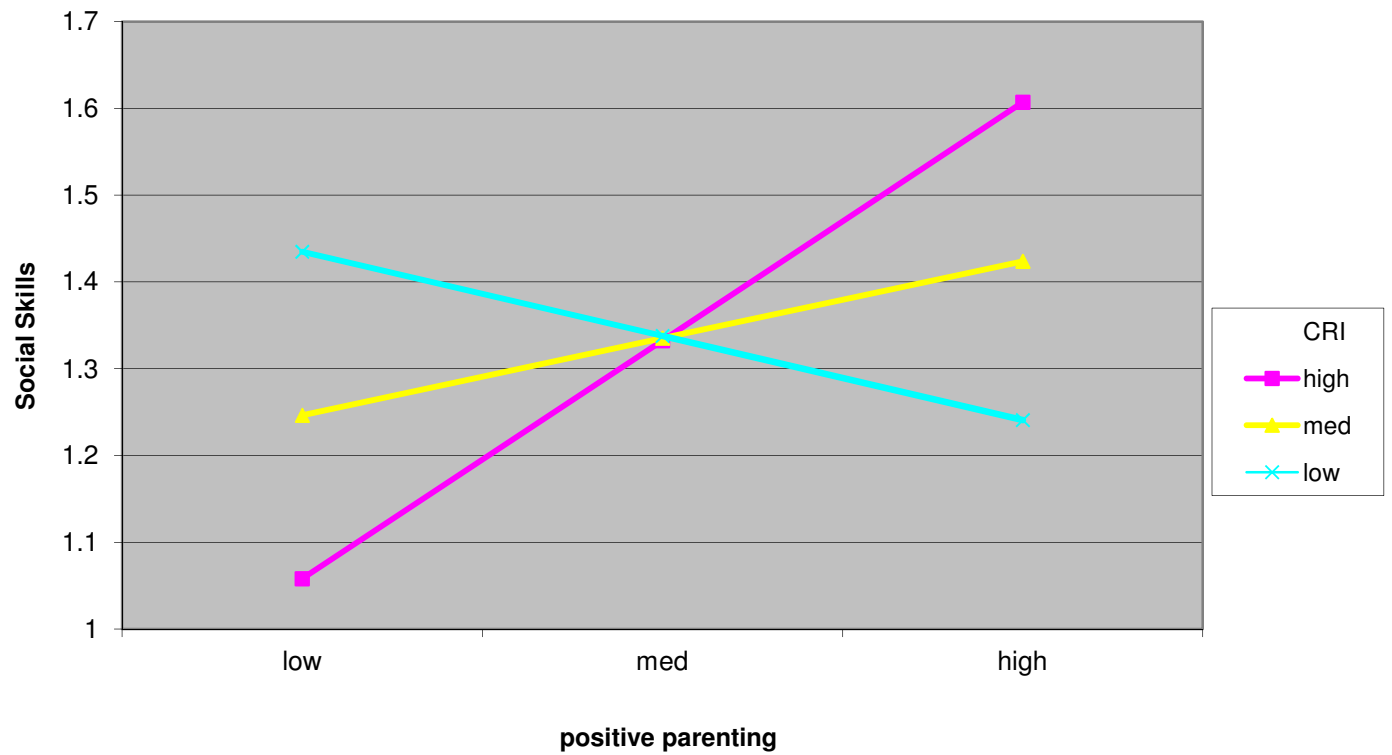


Panel B



Appendix C

Figure 2. *Graphic decomposition of cumulative x positive parenting interaction*



VITA

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